# Can we explain the generation gap in churchgoing?

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**Abstract**

In Western societies, secularization in the sense of declining individual religiosity is mainly caused by cohort replacement. Every cohort is somewhat less religious than its predecessor, indicating that religious transmission is incomplete. Our aim in this article is to establish, describe and explain this lack of religious transmission in West Germany, comparing parents' and children's level of attendance and their determinants over time. We construct a dataset of parent-child pairs from the German Socio-Economic Panel (SOEP) and investigate (1) the frequency of transmission of attendance; (2) the attendance gap between parents and children and its persistence over cohorts and individuals; (3) whether and how various family and contextual variables predict the extent of religious transmission. We find that there is a high transmission of church attendance, but also a substantial parent-child attendance gap. This gap persists across individuals and cohorts. Family disruption and the percentage of nones in the state slightly increase the attendance gap. All other predictors have effects that are either non-significant or contrary to the expected direction. In general, it is difficult to attribute the incomplete transmission of churchgoing to specific predictors. Rather, secularization happens largely independently of attributes of the parents and their immediate surroundings.

## 1. Introduction

In recent decades, it has become increasingly clear that secularization in the sense of declining individual religiosity is produced by generational replacement. Most western societies are becoming less religious not because individuals are losing their religiosity in adult life, but rather because each new birth cohort is a little less religious than the one before (Crockett and Voas 2006; Stolz et al 2021; Voas and Chaves 2016; Wolf 2008). This finding prompts the question of how and why religion is not completely transmitted from parents to children, thus producing a religiosity gap observed between cohorts.

More specifically, we might ask whether it is possible to identify some specific predictors that largely account for the incomplete transmission of religion. Is religious transmission more difficult in urban areas? Or where religious pluralism is high? Does an increasingly liberal parenting style undermine the future religiosity of children? Do more highly educated parents refrain from inculcating faith? There are multiple theoretical possibilities; the problem is to test these ideas empirically.

We define transmission as a process by which religiosity (religious identity, practices, beliefs, values or norms) is passed on from parents to their offspring, either intentionally or unintentionally. Transmission according to our definition "succeeds" if children as adults show a similar level of religiosity (practice, belief, identity) as their parents; it breaks down when children as adults are markedly different from their parents. No value judgement is implied by these terms.

Research on religious transmission has increased our knowledge in important ways (Bader and Desmond 2006; Bengtson et al 2009; Bengtson et al 2013; Bréchon 2018; Copen and Silverstein 2008; McPhail 2019; Pollack and Rosta 2017; Smith 2020; Voas 2003; Voas and Storm 2012b)[i], but to the best of our knowledge studies that explicitly measure the parent-child religiosity gap and relate it to possible predictors are lacking.

Our aim is to establish, describe and explain the weakness of religious transmission in West Germany, comparing parents' and children's level of attendance and their determinants over time. Our primary research questions are: (1) To what extent is attendance at religious services passed on from parents to children? (2) Is there an attendance gap between parents and children and, if so, is it persistent over cohorts and individuals? (3) Can various family and contextual variables predict the transmission of attendance?

Tackling such questions is difficult because appropriate data are often lacking. We need linked data on parents and children for an extended period to prevent issues of reverse causation and possible life-cycle and period effects. Furthermore, we need rich data at the parent level on possible predictors of religious socialization. The German Socio-Economic Panel (SOEP) is a high-quality resource that contains this kind of information. We focus on parents with children in the sample, restricting our analysis to West Germany as the observation period starts in 1984, prior to German reunification. We also focus our analysis on just one indicator of religious involvement – attendance at services – to allow for in-depth analysis.

The contribution of this paper is twofold. By measuring religious transmission and the size and persistence of the attendance gap, we deepen our knowledge about secularization in West Germany. In relation to theory, we make progress in investigating the mechanisms underlying religious decline via cohort replacement, which potentially apply to all western countries. We consider a broad range of possible predictors of the parent-child attendance gap using high quality longitudinal data.

# 2. Theory

## 2.1 Religious transmission

Religious transmission happens in different ways (Bengtson et al 2013; De Graaf 2013; Martin et al 2003; Müller et al 2014). Parents may actively socialize their children in religious matters, for example by taking them to church and teach them prayers. But even without overt attempts at training, parents may act as models, observed and imitated by their children. Furthermore, parents have an important influence on the environment, via choice of schools, activities, youth groups, media, and even friends and partners. Finally, there may also be some genetic component to transmission, with some genes facilitating or hindering the acceptance of religious belief and practice.[ii] Religious socialization does not just depend on parents, of course; peers, institutions (church, school) and the wider social context influence whether children pick up religion or not.

## 2.2 Predictors of religious transmission

Various predictors of religious transmission have been suggested in the literature (Sherkat 2003; Thiessen and Wilkins-Laflamme 2017). Much of this research is informed by a more general interest in whether the family can still perform its function as a transmitter of important values. It is not concerned with what interests us here, namely the question of what mechanisms underlie cohort-replacement secularization.

### Parental liberalism, inconsistency, and heterogamy

A first group of mechanisms relate to independent thinking as value held by many parents in contemporary Western societies. They try to respect opinions or behavior different than their own. Several scholars argue that liberal religions are inherently precarious because parents are not sure what message they should transmit to their children, and even if they do know, they tend to leave their children free to accept or reject the lessons (Bruce 2002; Stolz et al 2016).

By contrast, conservative religions are supposed to be better able to keep their offspring in the fold because they (1) require more religious practice and children are socialized accordingly; (2) are clearer about their message and therefore transmit it more easily; (3) are more motivated to inculcate their faith, which they believe is superior to others and crucial to salvation; (4) make retention of children a priority for parents and impose sanctions if the norm is breached; (5) can rely on parallel institutions for youth that help to keep the children in the milieu. In a recent longitudinal study in the US, Smith (2020) finds that parents who describe themselves as religiously conservative are significantly more successful in transmitting their religiosity to their children than those describing themselves as liberal. Myers (1996) shows a modestly higher transmission among conservative Protestants than among liberal/ moderate Protestants.

Parental liberalism can also show up in inconsistency of religious beliefs and behavior (such as finding religious attendance important, but never going to church) or religious heterogamy, either when parents have different religions or one parent has no religion. Bader and Desmond (2006) find that higher consistency between religious attitudes and behavior leads to higher religious transmission. Likewise, Stolz and Favre (2005) report that evangelicals are more likely to transmit churchgoing to their children than mainline parents. McPhail (2019) finds that having parents with different religions covaries with weaker religious transmission, although this relationship disappears when controlling for parent attendance. Voas and Storm (2012a) report that children with two churchgoing parents are more likely to attend than those having only one. In most studies that report an effect of religious inconsistency, it is unclear whether what matters is lower average parental religiosity or *inconsistency* specifically.

### Parent-child distance and family conflict

A second group of possible mechanisms concerns emotional distance and conflict between parents and children. A closer relationship, a more trusting, accepting, and harmonious environment, according to this argument, leads children to see their parents as role models and to reproduce their level of religiosity (Bengtson et al 2013). Bao (1999) finds that perceived parental acceptance leads to higher religious transmission. Myers (1996) finds that "positive parent-child relationships foster continuity in religious behaviors between

generations." While this mechanism might account for variation in transmission, it does not seem to be useful in explaining the religious *gap*, since inter-generational tension has not increased in recent decades in western democracies.

### Parental family structure and divorce

Non-traditional family structures and divorce might weaken religious transmission, although the evidence is mixed. While some studies suggest that religious transmission is most successful in families with two biological parents (Myers 1996; Petts 2015), other studies do not find such an effect (Denton 2012; Uecker and Ellison 2012). The impact of divorce is equally disputed. Copen (2008) finds a negative effect on religious transmission, but Denton (2012) reports that divorce has different effects for different religious profiles, sometimes decreasing and sometimes increasing religiosity. Zhai (2007) shows that children of divorced parents show lower attendance but similar levels of prayer and closeness to God.

### Parental and contextual leisure culture

A fourth group of mechanisms relate to the possible influence of secular alternatives. According to this account, religious socialization is more difficult if churchgoing faces competition from attractive non-religious activities. If children can play, shop, watch television, chat to friends on the phone, or engage in any number of other pursuits now available to young people, it is harder to push them to go to church. McAndrew and Richards (2020) show in a fascinating longitudinal study on a 1933-1942 urban English cohort that secular activities in childhood seem to have led to more secularity as an adult. Likewise, McLeod (2007) gives many examples of how increasing leisure options crowded out religious activities during the 1960s. Stolz et al. (2016) report that parents who want to socialize their children religiously feel the pressure of secular alternatives, especially when children feel entitled to make their own choices.

### Parental education and economic security

Increasing parental education and economic security may weaken religious transmission. Educated parents often want to instill critical thinking in their children and are more tolerant of religious doubt. Prioritizing intellectual independence therefore weakens transmission of religious commitment (Stolz 2020). Similarly, economic security may lead parents to place less emphasis on religious solutions to life problems and to reduce their commitment to religious transmission accordingly. Müller, Schmidt and De Graaf (2014) show that religious transmission tends to work better in societies with high economic insecurity, measured by income inequality rather than overall economic development.

### Parental residential context: urbanism, diversity, and secularism

A sixth group of mechanisms relates to urban, diverse, and secular contexts. In contrast to rural areas, large towns and cities offer a wide array of secular options and worldviews, which makes it difficult for parents to steer their children into religion (McLeod 2007). Religious diversity is thought to erode religiosity, since it undermines the plausibility of belief and the norms prescribing practice (Berger 1990 (1967)). And secular thinking and practice may be the norm in unreligious areas, making it difficult for parents to keep their children in the fold. Kelley and De Graaf (1997) claimed that religious parents are especially influential in more secular societies, perhaps because they have to work harder to socialize

their children religiously. Voas and Storm (2020) criticized this conclusion and argued that parental and environmental influences are largely independent of each other. In a study comparing secular Jews in Israel and the US, Lazerwitz and Tabory (2002) show that the majority religious context has a significant effect. Secular Jews in Israel are pushed into more Jewish practice, while those in the US acquire some traits more characteristic of Christian religiosity.

## 2.3 Accounting for the religious transmission gap

One of our key questions is whether religious transmission from parents to children is incomplete, and in what ways. There are three points to note:

(1) The correlation between parents' and children's religiosity might stay constant over time, while the level of children's religiosity has declined. Conversely, the average level of children's religiosity might remain the same as their parents', but the correlation between the two has declined. Although we investigate both, we are mainly interested in intergenerational changes in the frequency of churchgoing.

(2) Religious transmission is persistent in individuals if the religious involvement acquired in the parental home remains constant when the person reaches adulthood. Religious transmission is persistent over cohorts if the correlation or gap described in (1) above is constant from one cohort to the next. We will investigate the persistence of transmission both over individuals and cohorts.

(3) Two of the factors that have received most attention in the literature do not seem helpful in explaining the religious decline. Liberal denominations, inconsistency and heterogamy may have a negative impact on religious transmission, but these characteristics may themselves be products of secularization. Parent-child closeness might boost religious transmission, but as closeness is highly unlikely to have declined, we need to look elsewhere for drivers of the aggregate attendance gap. Seven other predictors seem more promising: family disruption, liberal values, leisure culture, education, urbanism, pluralism, and secular environment.

## 2.3 Hypotheses

This background discussion can be synthesized in three hypotheses.

H1: The attendance of parents and children are positively correlated.

H2: There is a significant parent-child attendance gap.

H3: The parent-child attendance gap is higher when levels of the following are higher in parents and the environment of upbringing:

- H3.1: Denominational liberalism, inconsistence, heterogamy
- H3.2: Parent-child distance and conflict between parents
- H3.3: Family disruption
- H3.4: Education

H3.5: Value liberalism
H3.6: Leisure mindedness
H3.7: Urbanism
H3.8: Pluralism
H3.9: Secularity

# 3. Method

## 3.1 Data

We use the core dataset from the German Socio-economic Panel (SOEP), available at the Deutsches Institut für Wirtschaftsforschung (DIW).[iii] Our dataset includes 35 waves (1984-2018) for West Germany, which includes the states ("Länder") that belonged to the Federal Republic of Germany prior to reunification with the former German Democratic Republic in 1990.[iv]

For our analysis of religious transmission, we select all parent-child pairs in the dataset in the age-range 16-75 and exclude immigrants from other countries, as well as east-west migrants within Germany. The resulting dataset contains 8213 children whose church attendance is observed at different points in time as well as information on one or both parents belonging to the Panel.

## 3.2 Measures

**Dependent variables**

We use two main dependent variables. *Child church attendance* is a four-category variable with values of weekly (or more) = 4, once a month = 3, less often = 2, never = 1. Child attendance is taken from the first year in which it was recorded unless otherwise indicated. This is normally at age 17 (with around 90% between 17 and 24). The *parent-child-attendance-difference* is simply Child attendance – Parent attendance, ranging from 3 to -3.

**Independent variables**

*Parental attendance* is measured as the mean of the mother's and the father's church attendance at the first available survey year. If the value for one parent was missing, we used the value of the other parent. Attendance has four categories as described above, so the mean of maternal and paternal attendance can take seven values, from 1 to 4 in steps of 0.5. The Spearman correlation of maternal and paternal attendance is .696.

Our other independent variables are potential predictors of the parent-child attendance link. Four variables measure attributes of the parents: denomination, education, value liberalism and secular leisure-mindedness. Two variables capture family relations: family disruption and closeness of the child to the parent. Three variables measure the social context in which the child grew up: urbanism, religious diversity, and secularity. Unless otherwise indicated, these measures come from the first wave in which the variables were recorded for a parent.

**Controls**

At the child level, we control for sex and birthyear.[v] At the parent level, we control for birthyear, education, and household income. Furthermore, we control for grandparents'

education. Parental education is routinely used as a control except in the analysis of predictors, where it is explicitly introduced along with an interaction.

The independent and control variables are listed in Table 1. We selected (where not otherwise indicated) the earliest occurrence of the parental variables in the dataset. If values for both (grand)mother and (grand)father were available, we took the mean; otherwise, we used the value for the only parent.

*Table 1* *Operationalizations of mediators and controls*

| **Mediators** | |
|---|---|
| Parental denomination | categories: "Both Catholic", "Both Protestant", "Both other Christian", "Both other religion", "Mixed Christian", "Mixed other religions", "One no religion", "Both no religion". |
| Parental education | 1 = lower; 2 = secondary general; 3 = intermediate; 4 = technical high school; 5 = higher. The Spearman correlation between father and mother is 0.62. |
| Parental value conservatism/ liberalism | Scale measure based on importance of (a) being dutiful; (b) being secure; (c) being successful; (d) being industrious and ambitious; (e) law and order, each from 1 = not at all important to 10 = very important. Cronbach's alpha = 0.7. The Pearson correlation between father and mother is 0.482. |
| Parental secular leisure-mindedness | Scale measure derived from six items on how often the respondents would: (1) go to cinema; (2) attend jazz or pop concerts; (3) go out to eat and drink; (4) do sports; (5) go out to visit friends; (6) visit sporting events, where the options were 5 = daily, 4 = every week, 3 = every month, 2 = more rarely, 1 = never. Ordinal alpha = 0.71. The correlation between father and mother is 0.633. |
| Family disruption | 1 = there has been a divorce or separation of the parents, 0 otherwise |
| Urbanism | Number of inhabitants of the town on a seven-point scale: 1 = less than 2 000; 2 = 2 000 to 5 000; 3 = 5 000 to 20 000; 4 = 20 000 to 50 000; 5 = 50 000 to 100 000; 6 = 100 000 to 500 000; 7 = 500 000 or more. The Spearman correlation between father and mother is .985. |
| Religious diversity | Herfindahl Index (HFI) at Bundesland (state) level, calculated using the proportion of the population that is mainstream Protestant, Evangelical, Catholic, Other, and No religion. |
| Secularity | Percentage of individuals without religious affiliation in the state (Bundesland) |
| **Controls - child** | |
| Sex of the child | 0 = female; 1 = male |
| Birthyear of the child | birthyear |
| Birth cohort | Four levels: 1961-1970, 1971-1980, 1981-1990, 1991-2000 |
| **Controls - parents, grandparents** | |

| | |
|---|---|
| Birthyear parents | Mean of the parents' birthyears |
| Parental education | 1 = lower; 2 = secondary general; 3 = intermediate; 4 = technical high school; 5 = higher. The Spearman correlation between father and mother is 0.62. |
| Parental household income | Mean household gross income of parents when the respondent was a child |
| Grandparents' education | 1 = lower; 2 = secondary general; 3 = intermediate; 4 = technical high school; 5 = higher |

Table 2 gives descriptive statistics on these variables. Note that child attendance is lower than parent attendance; it is this gap that we wish to explain.

*Table 2 Descriptive statistics*

| | Mean | Std. Error |
|---|---|---|
| *Child* | | |
| attendance | 1.657 | 0.009 |
| male | 0.532 | 0.006 |
| birthyear | 1983.737 | 0.126 |
| | | |
| *Parents* | | |
| attendance | 2.064 | 0.011 |
| conservatism | -0.089 | 0.013 |
| leisure culture | 3.845 | 0.007 |
| education | 2.907 | 0.011 |
| household income (mean) | 38049.742 | 317.274 |
| divorced/separated | 0.145 | 0.004 |
| urbanism | 3.959 | 0.019 |
| pluralism (HFI) | 0.139 | 0.001 |
| percentage nones | 0.086 | 0.001 |
| birthyear | 1954.340 | 0.131 |
| closeness | 0.084 | 0.007 |
| both Catholic | 0.371 | 0.000 |
| both Protestant | 0.294 | 0.000 |
| both other Christian | 0.013 | 0.001 |
| mixed Christian | 0.129 | 0.000 |
| one no religion | 0.098 | 0.000 |
| both no religion | 0.095 | 0.000 |
| | | |
| Grandparents education | 1.318 | 0.012 |
| | | |
| # of siblings per child | 2.313 | 0.007 |
| n (Children) | 8213 | |

Note: In this sample, parents are "weighted" according to the number of the children.

### 3.3 Data analysis

As outlined in the introduction, our study asks the following questions: (1) How successfully is religious attendance passed on from parents to children? (2) Is there an attendance gap between parents and children and if so, how large is it? (3) To what extent do various family and contextual variables predict the transmission of attendance, and (4) how well do these variables explain the parent-child attendance gap?

To address the first question, we examine the conditional correlations between parents' and children's attendance by specifying a linear multilevel (or mixed effects) model in which children are nested in parents (households).

Second, we add an interaction with child age. To do so, we observe attendance for children in different years. We therefore have to specify a multilevel model with three levels: years are nested in children who are nested in parents (households).

Third, we go back to a two-level model, but now we measure the *attendance gap* between parents and children, controlling for the same variables as before. Fourth, we add several parent-level predictors to the model.

A detailed description of the models, alternative specifications, imputation of missing variables, use of weights, and robustness checks can be found in Appendix 1.

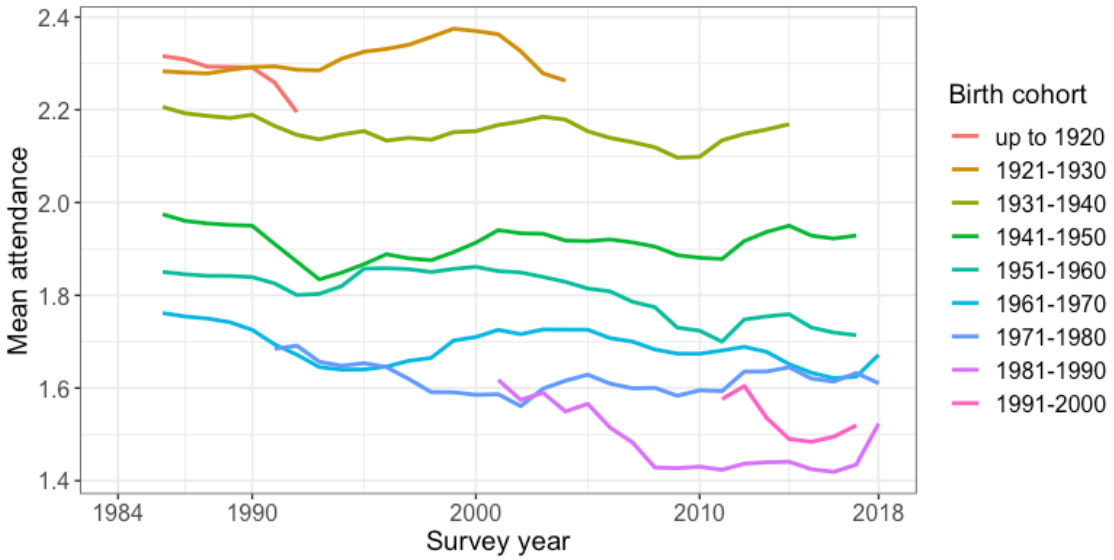
## 4. Results

### 4.1 Establishing the premise: cohort replacement

The central motivation of our study is to explain why cohort replacement reduces attendance, so we first check graphically whether it is operating as expected in the SOEP dataset. As Figure 1 shows, it is, and almost perfectly. Each successive birth cohort attends church slightly less often on average than the previous one, while average attendance remains very stable for every cohort over time. Elderly churchgoers die out and are replaced in the population by younger people who attend less often, thus producing an overall decline.

The youngest cohort, born 1991-2000, seems to be an exception in that its attendance is higher than that for the previous cohort. But these individuals were young when their churchgoing was recorded, and it has often been observed that religious identity and practice only stabilize around age 25.

*Figure 1 Attendance by cohort in west Germany 1985-2018*




Notes: Dependent variable: Attendance, ranging from 1 = "never" to 4 = "weekly or more often". Individuals living in West Germany, aged 20 – 75; international migrants and east-west-migrants are excluded. Only datapoints based on n ≥ 100 observations are used. Lines show a simple moving average spanning three survey years.

## 4.2 Is church attendance transmitted and if so, to what extent and with what persistence?

The church attendance of parents and their adult children is highly correlated; the relationship is robust to all kinds of controls. In Table 3, we use straightforward linear models to calculate the influence of parents. Without any restrictions or controls, the correlation is 0.488*** (Model 1). Controlling for the child's sex and year of birth makes no significant difference (Model 2). Controlling for parental characteristics (education, birthyear, household income, grandparents' education) reduces the coefficient only slightly (Model 3). To see whether transmission is gendered, we performed the analysis for father-son and mother-daughter pairs. The coefficient is slightly higher on the female line, but the differences are not large (Models 4 and 5).

It is worth reflecting on *when* to measure the attendance of parents and children. If we do it at the same time, parental attendance might have changed since the period of religious socialization. Moreover, reverse causality could be a problem if children influence their parents' churchgoing. We can calculate the association just for parent-child pairs where attendance was recorded at a relatively similar age in each generation (less than 11 years difference). This reduces our sample size considerably, but the coefficient is increased to 0.554*** (Model 6). We can also try the reverse strategy to see what happens if we look at parent and child attendance when they are recorded in the same year. Again, we find an increased coefficient.

The overall message is that the influence of parental attendance on child attendance is strong, highly significant, and robust to all kinds of controls.[vi]

*Table 3 Intergenerational transmission of church attendance*

| | Dependent variable: child attendance | | | | | | |
|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
| Parent Attendance | 0.488*** (0.010) | 0.485*** (0.010) | 0.481*** (0.010) | 0.458*** (0.014) | 0.487*** (0.015) | 0.554*** (0.030) | 0.529*** (0.010) |
| Observations (Pairs) | 8213 | 8213 | 8213 | 3455 | 3136 | 907 | 6505 |
| Sample | All | All | All | Father-Son | Mother-Daughter | Parent-child similar age | Parent-child same year |
| Child demographic | | ✓ | ✓ | | | ✓ | ✓ |
| Parent demographic | | | ✓ | | | ✓ | ✓ |

Notes: Estimates from equation (1) in Appendix 1. Each column is a different linear multilevel model. $* p < 0.1$, $** p < 0.05$, $*** p < 0.01$. Standard errors are shown in parentheses. The dependent variable is child attendance measured as weekly (or more often) = 4, once a month = 3, less often = 2, never = 1. Child demographics: sex and birthyear. Parent demographics: education, birthyear, household income, grandparents' education. Model 4 looks only at correlations between fathers and sons, Model 5 only at correlations between mothers and daughters. Model 6: analysis only for parent-child dyads where the age of parents and children at the time of observation is similar (less than 11 years). Model 7: analysis only for parent-child dyads in the first occurrence of the same year of observation for parents and children.

Does the influence of parents on their children's attendance persist through adulthood, or does it fade away (or strengthen)? To investigate this, we introduce an interaction of parental attendance and child age. We use multilevel models with years nested in children nested in parents (households). There is a significant negative effect of age, meaning that attendance decreases as the child ages. Furthermore, the interaction with parental attendance is significant and negative, meaning that attendance decreases more for higher levels of parental churchgoing. In Model 1 we use only random intercepts; in Model 2 we add random slopes. In Model 3 we do the analysis only for siblings, to control for possible unobserved confounding effects influencing both parents' age when having children and the transmission of attendance.

*Table 4 Persistence of transmission over individuals*

| | Dependent variable: Child attendance | | |
|---|---|---|---|
| | Model 1 | Model 2 | Model 3 |
| | | | |
| Parental Attendance | 0.513 *** (0.010) | 0.527 *** (0.015) | 0.550 *** (0.019) |
| Child age | -0.003 *** (0.000) | -0.011 *** (0.001) | -0.012 *** (0.001) |

| | | | |
|---|---|---|---|
| Parental Attendance * Child age | -0.005 *** (0.000) | -0.007 *** (0.001) | -0.008 *** (0.001) |
| Observations (Pairs) | 8213 | 8213 | 6407 |
| Sample | All | All | Only siblings |
| Random effect for slopes | | ✓ | ✓ |
| Child demographics | ✓ | ✓ | ✓ |
| Parent demographics | ✓ | ✓ | ✓ |

Notes: Estimates from equation (2) in Appendix 1. Each column is a different linear multilevel model with person and household random effects. Standard errors are shown in parentheses. $*\ p < 0.1$, $**\ p < 0.05$, $***\ p < 0.01$. The dependent variable is child attendance measured as weekly (or more often) = 4, once a month = 3, less often = 2, never = 1. Child demographics: sex and birthyear. Parent demographics: education, mean age (of mother and father), household income, grandparents' education. Age is centered + 20. Model 1and Model 2 include all children in the sample. Model 3 only looks at siblings. Model 1 only uses random intercepts, Models 2 and 3 also include random slopes.

Another interesting question is whether the success of religious transmission has changed over birth cohorts. As shown in Table 5, parental influence is similarly high across all four child cohorts, although it appears to be somewhat higher for the 1971-1980 cohort than the others.

*Table 5 Attendance transmission by birth cohort*

| | Dependent variable: Child attendance | | | |
|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 |
| Parental attendance | 0.492 *** (0.026) | 0.539 *** (0.022) | 0.455 *** (0.017) | 0.472 *** (0.015) |
| Observations (Pairs) | 1125 | 1424 | 2513 | 2921 |
| Sub-sample (birth cohort) | 1961-1970 | 1971-1980 | 1981-1990 | 1991-2000 |
| Child demographics | ✓ | ✓ | ✓ | ✓ |
| Parent demographics | ✓ | ✓ | ✓ | ✓ |

Notes: Estimates from equation (1) in Appendix 1, calculated separately for different cohorts. Each column is a multilevel linear model for a different birth cohort. $*\ p < 0.1$, $**\ p < 0.05$, $***\ p < 0.01$. The dependent variable is child attendance measured as weekly (or more often) = 4, once a month = 3, less often = 2, never = 1. Child demographics: sex and birthyear. Parent demographics: education, mean age (of mother and father), household income, grandparents' education.

## 4.3 How large is the attendance gap and does it change over time?

Children go to church significantly less often than their parents (Table 6). We take the size of this gap as our dependent variable, always controlling for parental attendance. The intercept in each model represents the mean difference between child and parental attendance. In the first year of observation, it is -0.351 on the 1-4 scale and highly significant (Model 1). Calculating Cohen's d for effect size we obtain a value of -0.46 (a small effect, although close to the threshold of 0.5 that indicates a moderate effect). In terms of churchgoing monthly or more often, the figure for parents is 20.5 percentage points higher than for children, which seems substantial. The various models follow the pattern outlined for Table 3 above. We add child and parent controls in Models 2 and 3 respectively. We consider father-son and mother-daughter pairs in Models 4 and 5. We measure attendance at a similar age for parents and children in Model 6 and simultaneously in Model 7. The latter two models are important, because an attendance gap when churchgoing is measured early for parents and later for children might result from a period effect. In fact, though, the attendance gap is very robust to all model specifications, as shown in Table 6.

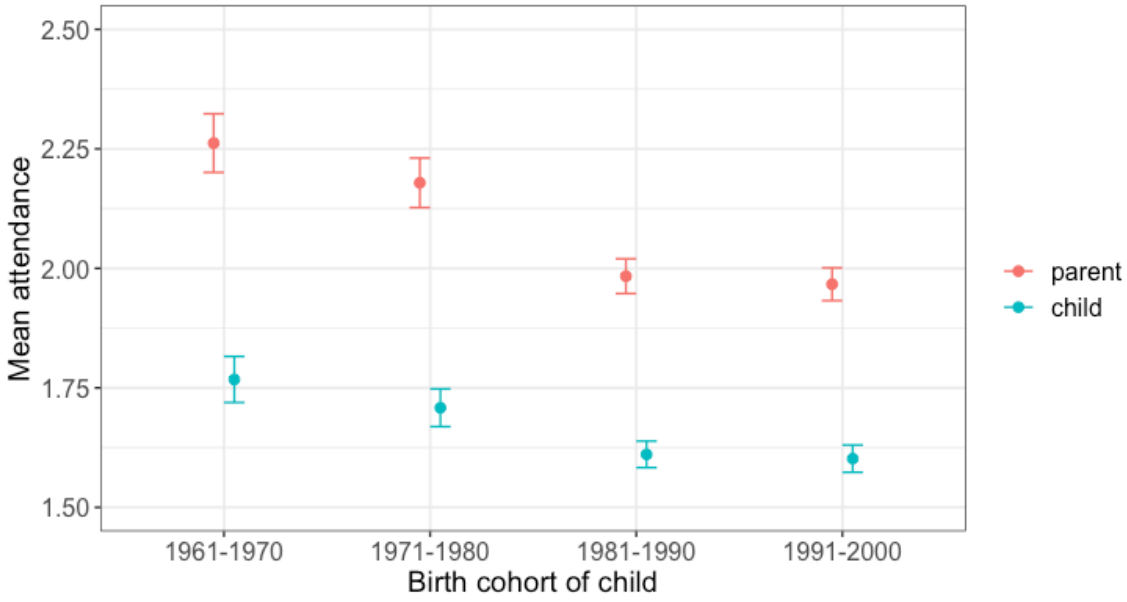
*Table 6 Attendance gap between parents and children*

| | Dependent variable: Child attendance - Parental attendance | | | | | | |
|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
| Intercept (Gap) | -0.351*** (0.009) | -0.350*** (0.009) | -0.350*** (0.009) | -0.307*** (0.014) | -0.363*** (0.015) | -0.341*** (0.028) | -0.312*** (0.010) |
| Observations (Pairs) | 8213 | 8213 | 8213 | 3455 | 2982 | 907 | 6505 |
| Sample | All | All | All | Father-Son | Mother-Daughter | Parent-child similar age | Parent-child same year |
| Parental attendance | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Child demographics | | ✓ | ✓ | | | ✓ | ✓ |
| Parent demographics | | | ✓ | | | ✓ | ✓ |

Notes: Estimates from equation (3) in Appendix 1. Each column is a different multilevel linear model. $* p < 0.1$, $** p < 0.05$, $*** p < 0.01$. Standard errors are shown in parentheses. The dependent variable is child attendance - parent attendance (values: -3 to 3). Child demographics: sex and birthyear. Parent demographics: education, mean age (of mother and father), household income, grandparents' education.

We can visualize the size of the parent-child attendance gap for the four observed cohorts without including controls (Figure 2). It is somewhat larger for the two earlier cohorts than for the two later cohorts. Of course, as churchgoing approaches a floor with secularization, some tightening of the gap is to be expected.

*Figure 2 Attendance gap by birth cohort*

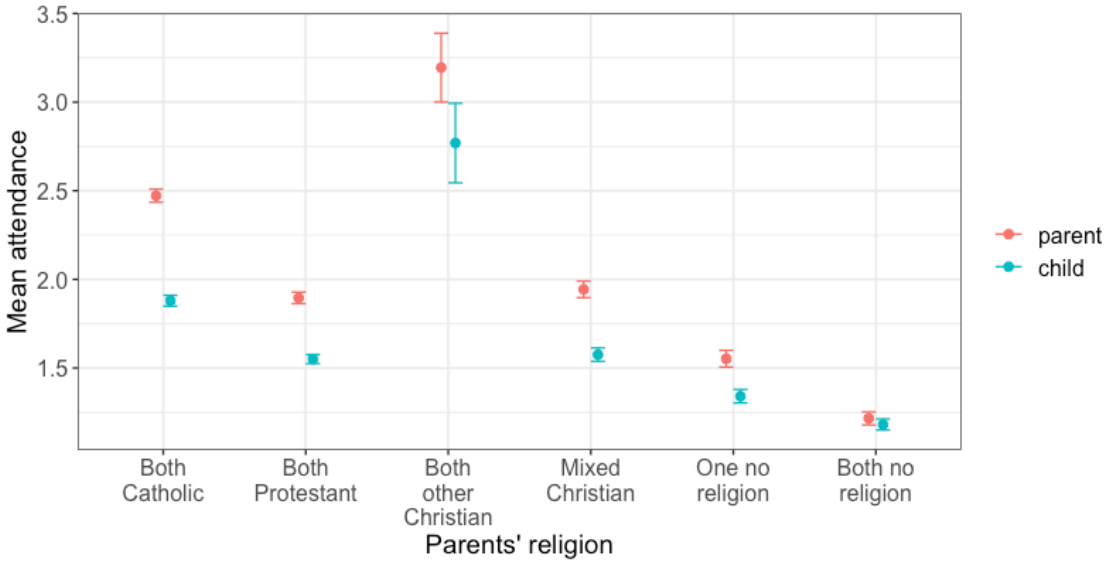



Notes: Attendance, ranging from 1 = "never" to 4 = "weekly or more often", for parent-child pairs in West Germany; immigrants and east-west-migrants are excluded. Parental attendance is the mean of mother's and father's attendance. Bars represent the 95% confidence interval for the mean.

## 4.4 What parental and contextual factors influence the transmission of church attendance and how do these influences change over time?

In a final step, we ask how religious transmission varies according to a number of predictors, starting with parental denomination.[vii] In Figure 3 we plot the attendance gap against parental denomination without adjusting for any controls. The attendance gap is present and statistically significant in all categories except where both parents have no religion. It is highest where both parents are Catholic. Protestants, "Other Christians" (mostly evangelicals) and the mixed group have child-parent gaps of similar size, though the confidence interval for Other Christians is wider because of a smaller number of cases and so caution is needed in this case.

*Figure 3 Attendance gap by parental religion*




Notes: Attendance, ranging from 1 = "never" to 4 = "weekly or more often", for parent-child pairs in West Germany; immigrants and east-west-migrants are excluded. Parental attendance is the mean of mother's and father's attendance. Bars represent the 95% confidence interval for the mean.

Has the influence of denomination on transmission changed across birth cohorts? Judging from Table 7, the answer appears to be "no." The coefficients for the whole sample are given in the first column (Model 1), followed by those for each successive cohort (Models 2-5). There is a slight decline in the intergenerational attendance gap for Catholics, but overall the estimates are fairly consistent across the four cohorts.

*Table 7 Intergenerational transmission of attendance by parental religion and cohort*

| | Dependent variable: Child attendance - Parental attendance | | | | |
|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
| Both Catholic | -0.504 *** (0.018) | -0.612 *** (0.045) | -0.528 *** (0.039) | -0.465 *** (0.032) | -0.463 *** (0.030) |
| Both Protestant | -0.294 *** (0.020) | -0.354 *** (0.054) | -0.266 *** (0.045) | -0.233 *** (0.035) | -0.315 *** (0.032) |
| Both other Christian | -0.506 *** (0.102) | -0.304 (0.432) | -0.447 (0.282) | -0.311 (0.183) | -0.626 *** (0.132) |
| Mixed Christian | -0.260 *** (0.029) | -0.295 ** (0.109) | -0.223 ** (0.076) | -0.178 *** (0.045) | -0.327 *** (0.043) |
| One no religion | -0.168 *** (0.033) | 0.062 (0.188) | -0.147 (0.093) | -0.103 (0.053) | -0.199 *** (0.044) |
| Both no religion | -0.047 (0.038) | 0.010 (0.143) | 0.015 (0.095) | 0.018 (0.061) | -0.113 * (0.055) |
| | | | | | |
| Observations (Pairs) | 8213 | 1125 | 1424 | 2513 | 2921 |
| Sample (all & different birth cohorts) | all | 1961-1970 | 1971-1980 | 1981-1990 | 1991-2000 |

| | | | | | |
|---|---|---|---|---|---|
| Child demographics | ✓ | ✓ | ✓ | ✓ | ✓ |
| Parent demographics | ✓ | ✓ | ✓ | ✓ | ✓ |

Notes: Estimates from equation (4) in Appendix 1, without additional predictors, but separately for different cohorts. The dependent variable is child attendance - parent attendance (values: -3 to 3). Every column is a linear multilevel model for all respondents (Model 1) or for a different birth cohort (Models 2-5). $* p < 0.1$, $** p < 0.05$, $*** p < 0.01$. The intercept is set to zero. Standard errors are shown in parentheses. Child demographics: sex and birthyear. Child demographics: sex and birthyear. Parent demographics: education, birthyear, household income and grandparents' education.

The denominational differences are not large. In any event, we are more interested in whether there are *non-religious* predictors that might explain the attendance gap. As before, our dependent variable is the difference in churchgoing frequency between children and their parents (while controlling for parental attendance). The intercept of the model then represents this difference, controlling for other variables. We introduce possible predictors such as parental education, value liberalism, leisure mindedness, family disruption (whether parents have ever been divorced or separated), and the degree to which the context of upbringing was urban, diverse, or secular. We are primarily interested in the main effects of these variables, but we also test interaction effects.

The results are presented in Table 8. The basic child-parent attendance gap appears in Model 1. In Model 2, we look at the effects of parental education, value liberalism, and leisure-mindedness. Education does have a significant effect, but in a direction that is contrary to our hypothesis: when parents have more education, their children are more similar in church attendance. Perhaps educated parents push their children to participate in more activities generally. Similarly, parental leisure activities have a significant effect, but in an unexpected direction: more leisure activities are associated with a smaller attendance gap. Perhaps parents who are engaged in secular ways encourage social activity of all kinds, including churchgoing, thus enhancing religious socialization. Parental value liberalism has no significant effect. Religious parents may have more conservative values, but those values do not have an independent effect on the size of the attendance gap.

We add the family interaction variables in Model 3. Of all the predictors tested, family disruption has the largest effect. Parental separation or divorce increase the attendance gap. Furthermore, the only significant interaction is between family disruption and parental attendance: disruption increases the attendance gap most when parental attendance is high. Even so, the effect of this variable is only moderate, and its inclusion leaves the intercept almost unchanged. Closeness of respondents to their parents has no significant effect on transmission. Earlier studies have emphasized the importance of the emotional quality of the parent-child relationship for the transmission of religiosity, so this finding is surprising.

Model 4 adds contextual variables. There is no significant effect of parents being in more urban or pluralistic areas. Secularity (measured as the percentage of nones in the state) has small effect; again, one might have expected these variables to have more influence on religious transmission.

Adding these variables to the model makes virtually no difference to the value for the intercept, which gives us the size of the attendance gap (when all the predictors are set to zero). Thus, while we do find significant effects of some predictors, only family disruption and secularity of the social environment go in the expected direction, and their effects are modest. These factors cannot account for the attendance gap. The difference in churchgoing between children and their parents seems to emerge relatively independently of parental attributes and the context of upbringing, as measured here.

*Table 8 Intergenerational transmission of attendance and various predictors*

| | Dependent variable: Difference: Child attendance - Parent attendance | | | |
|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 |
| Intercept | -0.350 ***<br>(0.009) | -0.349 ***<br>(0.009) | -0.356 ***<br>(0.009) | -0.355 ***<br>(0.009) |
| - Parental education | | 0.041 ***<br>(0.011) | 0.041 ***<br>(0.011) | 0.044 ***<br>(0.012) |
| - Parental liberalism | | -0.010<br>(0.009) | -0.011<br>(0.009) | -0.010<br>(0.009) |
| - Parental leisure | | 0.025 *<br>(0.011) | 0.022 *<br>(0.011) | 0.021 *<br>(0.011) |
| - Family disruption | | | -0.059 ***<br>(0.010) | -0.056 ***<br>(0.010) |
| - Family disruption * PA | | | -0.043 ***<br>(0.010) | -0.043 ***<br>(0.010) |
| - Parent close | | | 0.007<br>(0.008) | 0.007<br>(0.008) |
| - Urbanity | | | | -0.015<br>(0.010) |
| - Pluralism | | | | 0.013<br>(0.010) |
| - Secularity | | | | -0.026 *<br>(0.010) |
| | | | | |
| Observations (Ps) | 8213 | 8213 | 8213 | 8213 |
| Sample | all | all | all | all |
| Parental attendance | ✓ | ✓ | ✓ | ✓ |
| Child demographics | ✓ | ✓ | ✓ | ✓ |
| Parent demographics | ✓ | ✓ | ✓ | ✓ |

Notes: Estimates from equation (4) in Appendix 1. Every column is a different linear multilevel model. The dependent variable is child attendance - parent attendance (values: -3 to 3). $*\ p < 0.1$, $**\ p < 0.05$, $***\ p < 0.01$. Standard errors are shown in parentheses. Child demographics: sex and birthyear. Parent demographics: education, age (mean age of mother and father), household income.

## 5. Discussion

We set out to describe and explain religious transmission in West Germany. The gradual replacement of more religious by less religious cohorts is very evident in the SOEP data. We

focused on parent-child pairs to investigate the nature and determinants of religious transmission of church attendance. The answers to our research questions are clear.

First, parents are relatively successful in transmitting church attendance to their children. Our hypothesis H1 is thus confirmed. Transmission is robust to all kinds of controls. It is present in all four cohorts observed, though it is slightly stronger in the older than the younger cohorts. The influence of parents gradually fades as children age.

Second, there is a substantial parent-child attendance gap, confirming hypothesis H2. Again, this gap is robust to multiple controls and present in all four cohorts, though it is slightly larger in the older than the younger cohorts.

Third, we have found no specific predictors *mainly* responsible for secularization. Rather, secularization seems to happen largely independently of attributes of the parents or their immediate surroundings. Regarding denomination, there are significant attendance gaps for all groups, the largest being in families where both parents are Catholic. Despite their high attendance, Evangelicals (the major component of the "Other Christians" category) do not appear to have a large gap, but results are inconclusive. Of the non-religious predictors, family disruption and the percentage of nones in the state are the only factors that increase the attendance gap. The other independent variables had coefficients that were either not significant or not in the expected direction. Parent-child closeness, parental value liberalism, as well as the context with respect to urbanism and pluralism have no significant influence on the parent-child attendance gap. Parental education and leisure mindedness have significant moderating effects, but they seem to lead to smaller gaps.

If readers hoped that our study would reveal which specific variables drive the weakening of religious transmission, they have been disappointed. Children are less religious than their parents, but we can account for very little of these differences with other variables. This lack of success is all the more remarkable as we have excellent data on parents and their children, collected longitudinally on contemporaneous activities and characteristics. The data confirm the well-known cohort differences without enabling us to identify the mechanisms operating at the family or contextual level.

Disappointment, the notorious Sir Boyle Roche said, is the nurse of wisdom. But what wisdom is to be gleaned from this? One possibility is that the variables we have considered – along with other societal changes – operate indirectly through socially dominant values, ideologies, and worldviews rather than directly on individuals. Perhaps religious socialization fails because of a *general and societal* change in attitudes to both socialization and religion. For example, regarding religious involvement as a personal choice not to be imposed on others stems from a general respect for individual autonomy. This principle does not seem to be linked to specific attributes or family contexts, because it is almost universally shared in western societies (Smith and Lundquist Denton 2005).

This study is not the first to find that religiosity is determined more by the broad societal context than by individual characteristics. Various authors have found that key aspects of modernization (e.g., education, income) have strong effects on religiosity at the country level

but not at the individual level (Höllinger and Muckenhuber, 2019, Norris and Inglehart, 2004). To predict how religious people are, it is much more important to know whether they live in a rich or poor country than whether they are personally rich or poor. What matters is the dominant worldview and the perceived social significance of religion in a given country. Likewise, religion is not the only variable that responds to modernization in the way we suggest. The decline in fertility is a parallel case. "Changes in a population's fertility behavior are more like a change in a social norm than a reflection of decisions to change made independently by individuals, and are probably the outcome of common, community-wide factors" (Canning 2011).

This study has obvious limits. West Germany might be atypical; churchgoing might not be transmitted in the same way as other dimensions of religiosity; we have only studied cohorts born since the 1960s. We suspect that similar results will be found in other western countries for recent decades. But it remains to be seen whether our results are replicated by studies of other countries, cohorts and indicators of religiosity. We should also be wary about causality, as parental attendance and the predictors are not entirely exogenous.

Our results underline the puzzle posed by the secular transition: the pattern is clear, but the individual-level mechanisms are not (Voas 2008). The obvious hypotheses receive little support, except for modest effects of family disruption and secular context. We believe that this evidence of absence is an important clue. If we cannot identify attributes of families that are associated with waning religious transmission, perhaps we need to pay attention to the wider national or supra-national social context, and in particular to shifts in the social significance of religion and how those changes affect the socialization of children.

# Appendix 1

### *Modelling*

To address the first research question, we examine the conditional correlations between parents' and children's attendance by specifying a linear multilevel (or mixed effects) model in which children are nested in parents (households):

$$ATT_{cp} = (\beta_{00} + \beta_{01} ATT_p + \beta_{10} CONT_p') + (u_{0p} + e_{cp}) \quad (1)$$

where c stands for child and p for parent. $ATT_{cp}$ denotes attendance of child $c$ (in the first observed year) of parent $p$, $ATT_p$ is parental attendance, and $CONT_p'$ are controls relating to parents.[viii] $u_{0p}$ represents variation around the parent intercept and $e_{cp}$ is the remaining error. $\beta_{01}$ is the intergenerational attendance correlation of interest.

Second, we add an interaction with child age. To do so, we observe attendance for children in different years. We therefore have to specify a multilevel model with three levels: years are nested in children who are nested in parents (households). This leads to the following equation:

$$ATT_{cpt} = (\beta_{000} + \beta_{001}ATT_p + \beta_{100}AGE_{cpt} + \beta_{101}ATT_p \times AGE_{cpt} + \beta_{010}CONT_p{}') + (r_{0cp} + u_{00p} + u_{10c}AGE_{cpt} + \varepsilon_{cpt}) \quad (2)$$

where the first parenthesis encloses fixed terms. $AGE_{cpt}$ represents centred age of child *c* of parent *p* at time *t*. $\beta_{101}ATT_p \times AGE_{cpt}$ is an interaction between parental attendance and child age. The second parenthesis encloses random terms. $r_{0cp}$ is the variability around the child intercept, $u_{00p}$ is the variability around the parent intercept, $u_{10c}$ is the variability of the slope, and $\varepsilon_{cpt}$ is remaining error.

Third, we go back to a two-level model, but now we measure the *attendance gap* between parents and children, controlling for the same variables as before, by specifying a model as follows. The dependent variable is child attendance minus parental attendance, and we control for parental attendance, as well as child and parent characteristics. Child and parent characteristics are measured for the first observed data points.

$$ATT_{cp} - ATT_p = (\beta_{00} + \beta_{01}ATT_p + \beta_{10}CONT_p{}') + (u_{0p} + e_{cp}) \quad (3)$$

Fourth, we model the intergenerational attendance difference as a function of the variables in (3), but now add several parent predictors $PRED_p{}'$.

$$ATT_{cp} - ATT_p = (\beta_{00} + \beta_{01}ATT_p + \beta_{10}PRED_p{}' + \beta_{20}CONT_p{}') + (u_{0p} + e_{cp}) \quad (4)$$

Independent variables are standardized. We use weighted effect coding for categorical variables (Nieuwenhuis et al 2017). This allows us to interpret the intercept of model (3) and (4) as the mean attendance difference when all independent variables are set to their mean.

With equation (1), one might worry that the ordinal nature of our dependent variable (four categories) should be handled with ordinal models.[ix] Since ordered logistic regression was not applicable (the proportional odds requirement was not met), we have also run models with logistic regression (where the dependent variable is dichotomized with 1 = once a month or more often; 0 = less often). The results are substantively very similar. These analyses can be found in the online Appendix 2 (Table 2).

Regarding the estimation of equations (3) and (4), scholars have discussed the advantages and shortcomings of using difference scores as the dependent variable, while controlling for the pre-score (Jamieson 2004; Thomas and Zumbo 2012). We believe that this method is the most straightforward way of testing our specific research question. As a robustness check, we have also run the analyses with an alternative approach, specifying child attendance as the dependent variable explained by parental attendance and introducing the predictors as possible moderators of this relationship (which means observing the *interactions* between moderators and parental attendance). These analyses give substantively very similar results and can likewise be found in the online Appendix 2 (Table 3).

### *Imputation of missing variables, use of weights, robustness checks*

We imputed missing values for both dependent and independent variables. Missing values for dependent variables were imputed using a carryover procedure with individual's own data at other time-points (Lipps 2010). Missing values for independent variables were imputed with a carryover method and additionally with linear models. Missing values amounted to 7% or less (meaning that at least one value existed for every individual and variable) for most variables except for closeness to parents (58.9%), parental religion (21.8%), father's education (9.4%) and mother's education (7.7%)

We use unweighted data except for the analysis underlying Figure 1 (that shows cohort replacement), where the full SOEP dataset is used and we apply the weights provided by SOEP.[x] We do not use the weights since we are working only on selected dyads, which are a subset of the SOEP data. In robustness tests we found that applying the weights or not did not change the outcome of our analysis.

The Variance Inflation Factor for all independent variables in all models is < 3, except for child age and parental age where the VIF is between 5 and 6, which we still regard as acceptable.

Our results are robust to using logistic instead of linear models, using a moderator approach instead of using difference scores, including or excluding the weights, and including or excluding missing values.

Models were estimated with R, version 4.1.1. R scripts are available upon request from the authors and will be made available at the Open Science Framework (OSF) website: (https://osf.io).

### *Data Availability*

The data underlying this article (core dataset from the German Socio-economic Panel (SOEP)) are available at at the Deutsches Institut für Wirtschaftsforschung (DIW) at https://www.diw.de/soep. The direct use of SOEP data is subject to the provisions of German data protection law and requires signing a data distribution contract. The data distribution contract can be requested with a form, available at: http://www.diw.de/soepforms.

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[i] For a systematic review, see the online Appendix 2.
[ii] See footnote viii.
[iii] https://www.diw.de/de
[iv] We have excluded Berlin to avoid a strong influence from formerly socialist East Berlin on individuals in West Berlin.
[v] We do not control for birth order since parental religion might influence family size and therefore the probability of having a large birth order value.
[vi] In the sample, 38 children are not biologically related to their parents and 272 children to only one of their parents (0.4**%** and 3.1% percent of our sample). We have tested whether we find evidence for biological transmission of church attendance in our sample. We use an indicator for the non-biological relationship coded as 0 = both biological; 1 = one or both not biological parents. We then test whether the interaction between parental attendance and the indicator for non-biological relationship becomes significant. The estimate is -0.014 (*se* = 0.049; p-value = 0.769). This test has a power of .99. We conclude that there is no evidence for biological transmission of church attendance. It should also be noted that while genetic factors may in principle be responsible for a part of the parent-child correlation, it is difficult to imagine how they could be responsible for rapid decline, i.e., the gap in religiosity (except if they interacted with a changing social factor).
[vii] We do not present a model where denomination is seen as a predictor of the influence of parental attendance on child attendance. This is because parental denomination can be both a predictor and a mediator of attendance. If it is a mediator, we should not condition on it. We therefore use a separate model where we show the influence of parental denomination on child attendance, without also conditioning on parental attendance.
[viii] For simplicity we have omitted the child controls in all the formulae.
[ix] It can be shown that correlations with Likert scales are normally very robust to violations of the "equal distance" assumption (Norman, Geoff. 2010. "Likert scales, levels of measurement and the "laws" of statistics." *Advances in Health Science Education* 15: 625-32)
[x] These variables are called crossweight and longweight.